

PRICE
15¢

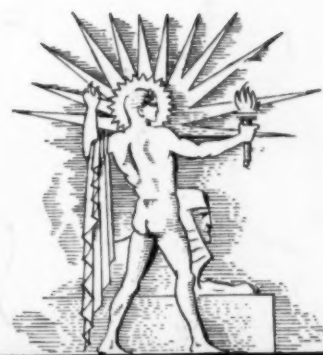
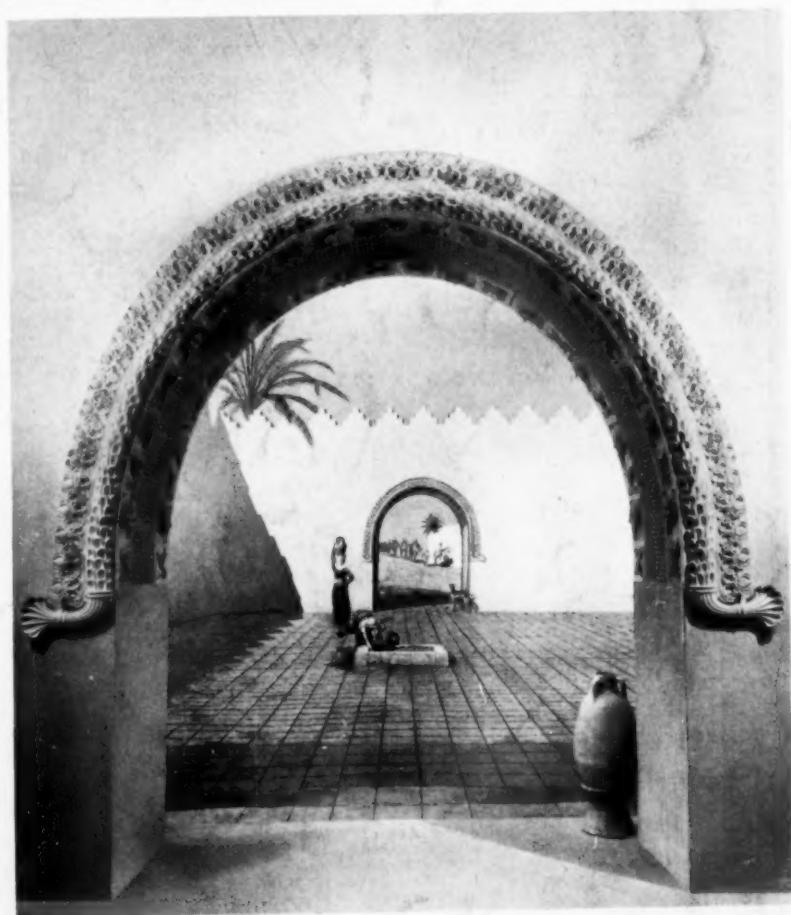
TECHNOLOGY DEPT.

PUBLIC LIBRARY

AUG 13 1940

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



August 10, 1940

Doorway to Antiquity

See Page 83

A SCIENCE SERVICE PUBLICATION

Do You Know?

Twelve Venetians who came to Jamestown colony in Virginia helped start America's glass industry.

A national campaign to cut down undesirable and unprofitable varieties of apple trees has been suggested.

Long-staple Sea Island cotton is reported especially suitable for making parachutes and airplane wing coverings.

About 90% of the United States' imports of oils and fats come from South America, West Africa, and the Far East.

Paint experts say that an object may appear heavier in weight if painted red or orange, lighter in weight if colored blue or yellow.

Temperature at the lighted end of a cigarette has been measured by sensitive instruments—it turns out to be 1,375 degrees Fahrenheit.

Traffic lines of neon light tubing under a red transparent cover of plastic embedded flat in the pavement are being tried out in Little Rock, Ark.

A rare instance of a bird marked in Europe being found later in North America: a puffin banded on St. Kilda in August 1939 was brought down four months later in Newfoundland.

Since a newly hatched clothes moth larva can crawl through an opening 4/1,000 of an inch wide, government entomologists advise sealing cracks in clothes chests with gummed tape.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

AGRICULTURE

What does war do to wheat exports? p. 91.

ARCHAEOLOGY

When were modern-shaped bricks first used? p. 83.

ASTRONOMY

How fast do stars move, in the Milky Way? p. 83.

How would the earth look, viewed from the moon? p. 83.

Why do certain planets appear to pass each other? p. 84.

What place in Brazil promises "good seeing" for next fall's solar eclipse? p. 89.

BACTERIOLOGY

Of what use are vitamin-deficient eggs? p. 85.

BIOLOGY

Who established the new electron microscope fellowship? p. 85.

When did the Commission on the Standardization of Biological Stains begin its work? p. 90.

What are carnassial teeth? p. 94.

ECONOMICS

How much crude oil have Britain and Japan been buying from the United States? p. 92.

ENGINEERING

Why are Edison storage batteries of little interest to Germany? p. 91.

How much American railroad trackage still awaits block signal installation? p. 93.

ETHNOLOGY

Where do Indians expect a revolution soon? p. 94.

GENERAL SCIENCE

What comfort is offered alien scientists interned in Britain? p. 88.

GEOGRAPHY

What are the "Outer Islands"? p. 90.

IDENTIFICATION

Can a man's nationality be told from his fingerprints? p. 86.

INDUSTRY

What percentage of Japan's machine tool imports formerly came from the United States? p. 89.

MEDICINE

What harm may the wrong kind of dyes cause? p. 88.

Of what use is a dead man's cartilage? p. 88.

When must doctors take care in administering sulfanilamide? p. 88.

MILITARY SCIENCE

What new device makes bombing deadlier? p. 92.

MINERALOGY

Where was the world's largest topaz found? p. 85.

NAVIGATION

Why do ships no longer need highly accurate chronometers? p. 84.

PALEONTOLOGY

When did Plesippus live? p. 93.

PHYSICS

How many combinations are possible with a new eye testing device? p. 89.

PHYSIOLOGY

How can you avoid being blinded by headlight glare? p. 89.

PSYCHOLOGY

What proportion of dogs are easy to make friends with? p. 91.

TECHNOLOGY

Where is the new Illinois Institute of Technology? p. 84.

WILDLIFE

Where are wild geese a pest? p. 93.

ZOOLOGY

How are Eskimos induced to take good care of their reindeer herds? p. 89.

Japanese prints of the eighteenth century served to reflect life and interests of the time—not unlike America's *Currier and Ives* prints.

The Japanese beetle, which apparently reached this country prior to 1912 in roots of Japanese plants, has spread to 23 states.

SCIENCE NEWS LETTER

Vol. 38 AUGUST 10, 1940 No. 6

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 2101 Constitution Avenue, Washington, D. C. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years \$7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

In requesting change of address, please give your old address as well as the new one, at least two weeks before change is to become effective.

Copyright, 1940, by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Cable address: Scienserve, Washington.

Entered as second class matter at the post-

office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

Members of the American Association for the Advancement of Science have privilege of subscribing to SCIENCE NEWS LETTER at \$3 a year.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Advertising rates on application. Member Audit Bureau of Circulation.

SCIENCE SERVICE is the Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Henry B. Ward, University of Illinois; Edwin G. Conklin, American Philosophical Society; J. McKeen Cattell, Editor, Science. Nominated by the National Academy of Sciences: R. A. Millikan, California Institute of Technology; Harlow

Shapley, Harvard College Observatory; William H. Howell, Johns Hopkins University. Nominated by the National Research Council: Ross G. Harrison, Yale University; C. G. Abbot, Secretary, Smithsonian Institution; Harrison E. Howe, Editor, Industrial and Engineering Chemistry. Nominated by the Journalistic Profession: O. W. Riegel, Washington and Lee School of Journalism; A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Baltimore Evening Sun. Nominated by the E. W. Scripps Estate: Karl Bickel, E. W. Scripps Co.; Warren S. Thompson, Miami University, Oxford, Ohio; Harry L. Smith-ton, Cincinnati, Ohio.

Officers—Honorary President: William E. Ritter. President: Edwin G. Conklin. Vice-President and Chairman of Executive Committee: Harlow Shapley. Treasurer: Harry L. Smith-ton. Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Frank Thone, Emily C. Davis, Jane Stafford, Marjorie Van de Water, James Stokley. Photography: Fremont Davis. Librarian: Minna Gill. Sales and Advertising: Hallie Jenkins, Austin Winant, Howard Bandy. Correspondents in principal cities and centers of research.

ASTRONOMY

Star Study Program Will Not Be Finished Until 2019

Special Star Camera Will Take Milky Way Pictures Now, Others for Comparison in Period 75 Years Hence

PHOTOGRAPHS made over a four-year period beginning in the year 2015 will be required to complete a research program to measure the rotation of the Milky Way, which will start soon at the Lick Observatory of the University of California, on Mount Hamilton.

A new \$65,000 star camera, making exposures on plates 17 inches square, will be used, says Dr. W. H. Wright, director of the Observatory. The 16-ton mounting for the camera, arranged to turn as exposures are made, thus compensating for the earth's movement, is now in place. Eventually it will have two lenses, one to photograph in blue and ultraviolet light, the other in yellow light.

However, the European war will delay indefinitely the completion of the former, since the glass discs of which it is ground were ordered from abroad. The glass for the latter arrived just before hostilities began, and is now being ground to the right curvature. For the present, says Dr. Wright, this one will do double duty.

Every clear night, after the lens is in place, photographs will be made, overlapping pictures of the northern part of the heavens. Four years, it is estimated, will be required to complete the work. Seventy-five years from now, the series will be repeated, and comparison of the two sets of plates will show the rotation of the Milky Way.

The sun, as well as all the stars we see, is part of the Milky Way system, or Galaxy, and partakes of this rotation. These stars are arranged in a great cluster the shape of a grindstone. We are inside, and when we look to the edge of the grindstone we see a much greater concentration of stars than when we look to the side. This concentration is the Milky Way. The grindstone is about 100,000 light years (600,000,000,000,000,000 miles) in diameter.

Stars nearest the center turn fastest. We are about two-thirds of the way out from the center, and at that distance take about 220,000,000 years to make one circuit. Long though this is, the distance is so great that we are traveling at a

speed of approximately 170 miles per second to make it. These figures will be known much more accurately in 2019, when the Lick Observatory program is completed.

Incidentally, the new star camera has many other uses, and will not be placed in retirement in the 75-year interval.

Science News Letter, August 10, 1940

ARCHAEOLOGY

Ancient Gateway of Kish Reconstructed in Museum

See Front Cover

ALITERAL gateway into the past is the outstanding feature of the Field Museum's new hall of Babylonian archaeology, which was recently opened to the public. It is a reconstructed gateway of the ancient city of Kish, on the Euphrates, rebuilt with the original stucco pieces taken from the ruins as far as possible, and with the gaps supplied by Museum artisans.

The gateway comes from the later days of Kish, when a Persian dynasty ruled over the Tigris-Euphrates valley. It dates from the reign of King Shapur II (310-370 A.D.) But Kish had days of glory far earlier than that. The city stood through changing fortunes for some 4000 years before it was finally abandoned in the seventh century A.D. At times it rivaled and even outshone its better known neighbor, Babylon, which stood only about ten miles away.

In the new hall dominated by the gateway are the fruits of ten years of intensive excavation of the ruins of Kish, including such interesting objects as one of the first wheels ever used on a chariot, building bricks which are almost exact duplicates of bricks made in modern kilns, bones of fresh-water fish that were left when a post-Noachian deluge swept over the city site, and even gambling devices from some proto-historic den of sin.

Science News Letter, August 10, 1940

ASTRONOMY

Rocket Journey to Moon Shown at Fels Planetarium

JOURNEYING by rocket to the moon, to see the earth eclipse the sun on April 15, 2033, will be the experience of visitors to the Fels Planetarium in Philadelphia, during August. F. Wagner Schlesinger, director of the Planetarium, has announced.

The Planetarium chamber, he said,



GOD MEETS GODDESS

A feature of the Field Museum's new hall of Babylonian archaeology is a frieze composed of enlargements of ancient seals. This one shows a god and a goddess in conversation, flanked by the same cuneiform inscription, repeated on each side. Between the pair are representations of a monkey, a fish, and a winged sun-disk.

Science News Letter, August 10, 1940

will seemingly be transformed into a rocket ship, and, as the trip is made, the moon will be seen growing larger and larger. Arriving there, visitors will disembark, and see the earth hanging in the sky above the lunar mountains. It will change in phase, as the moon does as seen from the earth. Then, at new

earth, the sun will pass behind our planet. The moon will be illuminated with a strange red glow, from a ring of ruddy light around the earth.

After a three-week period on the moon, compressed into 45 minutes, the voyagers will be safely returned to earth.

Science News Letter, August 10, 1940

NAVIGATION

Navy's Chronometer Shortage Not Serious; Radio Helps

SHORTAGE of chronometers—accurate marine timekeepers—which has led the U. S. Navy to reduce the number on battleships from the usual three to two, is not as serious as it might have been at the time of the last war.

Radio time signals in recent years have increased both in accuracy and number to such an extent that a navigator could now operate satisfactorily with no timepiece but a dollar watch. Twenty times a day, on a number of different frequencies, signals are broadcast from the powerful Navy radio stations at Arlington, Virginia, Mare Island, California, and other locations. Thus, even a relatively poor clock or watch can be checked frequently and its error determined.

These time signals originate here at the Naval Observatory, whose superintendent, Capt. J. F. Hellweg, invented the transmitting clock which has made possible such accurate time signals, usually precise to within a hundredth of a second or less. This clock can be very rapidly checked and set by comparison with the standard clocks, kept in an underground vault at constant temperature and pressure. The actual transmission is controlled by a vibrating quartz crystal, similar to those used to keep radio stations operating on the proper wave lengths. Similar clocks, adjusted by the signals from Arlington, are used at distant stations.

Though many chronometers have been imported from England, Switzerland and Germany, good ones are also made in the United States. There are many in private hands, and, if the shortage became serious, these could doubtless be obtained by the government.

The chronometer is needed to find a ship's longitude. Latitude can be found by observing with a sextant the sun's height when it has its greatest altitude—that is, at "high noon." But to get the longitude, the navigator must find his

local time, and compare this with the time at some fixed point, usually Greenwich, the British national observatory. If he is west of Greenwich, his time is earlier, if east, it is later. The difference tells him the distance he is east or west.

Chronometers carry Greenwich time, and the local time can be found by astronomical observations in one of several ways. Most ships in the past have carried three chronometers. If there were only one, it might stop. With two, an awkward situation might arise if they differed, for no one could tell which was correct. But with three there is greater safety, for not more than one is likely to be seriously in error at a time.

Science News Letter, August 10, 1940

TECHNOLOGY

Technical School Merger Announced in Chicago

A NEW technical school, the Illinois Institute of Technology, has been formed in Chicago by the consolidation of the Armour Institute of Technology and Lewis Institute, each with nearly a half century behind it. With a total of about 7000 students in day and evening classes, the new Institute will be one of the country's largest.

In order to perpetuate the old names, the Illinois Institute of Technology will have three departments: Armour College of Engineering, Lewis Institute of Arts and Sciences, and Armour Research Foundation. Henry T. Heald, Armour president for the past two years, is president of the new school.

Science News Letter, August 10, 1940

Fifty thousand airplanes, which the United States is called on to produce for defense, are about 2,000 more than this country has built in all the years since the Wright brothers' experiments.

ASTRONOMY

Saturn-Jupiter Triple Pass To Begin on August 15

BEGINNING of a rare and complicated set of steps in the dance of the planets, during which Jupiter will pass Saturn three times in six months, will occur on Aug. 15. The last time such a maneuver was seen was in 1682 and 1683.

Astronomers call this a "triple conjunction." It is an effect of the motion of the earth around the sun, at a speed of 18.5 miles per second. Jupiter, farther out from the sun, travels more slowly, only eight miles per second, while Saturn plods along at about six miles per second. Once a year, as we overtake these planets, they seem to go backwards, or "retrograde," in the same way that a slow freight train seems to be going backwards when you pass it in a fast express.

At the present time, both Jupiter and Saturn, which rise soon after midnight, are traveling in their direct motion, from west to east. Now Jupiter, brighter of the pair, is to the west, but on Aug. 15, at 8:00 a.m., Eastern Standard Time, he will pass his fainter brother. They will be separated by about two and a half times the apparent diameter of the full moon.

On Aug. 27, as the earth catches up to Jupiter, he will seem to stop, after that will retrograde, moving to the west. On Sept. 4, Saturn likewise will stop, and turn back. Then, on Oct. 11, Jupiter will again pass Saturn.

By Dec. 31, we shall have moved far enough along that Jupiter will again seem to stand still, and then start moving east once more. After Jan. 10, Saturn will resume his direct motion. On Feb. 20 the third, and final, conjunction of the series will take place. In the fall of 1941, the two planets will again move to the west, but this time Jupiter will not reach Saturn.

About 19 years from now, Jupiter will again pass Saturn, but then only once. While the planets will retrograde at that time, as they do every year, this backward motion will not occur at the right time to cause a triple conjunction.

A very famous triple conjunction occurred in the years 7 and 6 B.C., about the time of the birth of Christ. It has been suggested that this was one of the strange happenings in the sky observed by the Wise Men, which have come down to us as the "Star of Bethlehem."

Science News Letter, August 10, 1940



TRIFLE TOO LARGE FOR A GEM

Not a big cake of ice on a hot August day, is this crystalline mass that holds the interested attention of three scientists in the American Museum of Natural History, but the largest topaz in the world. (Usually we think of topazes as little things, worn as gems in rings or other jewelry.) This single crystal, weighing 596 pounds, is more than two feet long, almost two feet wide and more than a foot and a half high. It was discovered in the Brazilian state of Minas Geraes.

Science News Letter, August 10, 1940

BAACTERIOLOGY

Sick Eggs May Prove Help In Fight Against Disease

Virus Grown on Eggs Deficient in Vitamin Enables South African Scientists to Study Disease of Sheep

SICK EGGS are destined to be a new aid to scientific disease-fighting, it appears from a report by Dr. J. H. Mason, Dr. J. D. W. A. Coles and Dr. R. A. Alexander, of the Department of Agriculture and Forestry at Onderstepoort, South Africa, to the English scientific journal, *Nature*.

This may sound like some of the tales you have read about the strange concoctions medicine men of primitive tribes give to their patients. It is far from being that, however. The eggs are not fed to patients. They are to be used as food for germs about which scientists need to learn more in order to conquer disease.

Fertile eggs have been used for this purpose for some years. One of the newest vaccines, that for typhus fever, was

made by growing the typhus fever germs on fertile eggs.

The South African scientists tried, unsuccessfully, to use fertile eggs for growing the germ of bluetongue, a disease of sheep. Then it occurred to Dr. Coles that the germ might grow better on sick eggs than on normal ones. So they made the eggs sick.

This was done by feeding the hens a diet that was deficient in one of the B vitamins, riboflavin. For some not clearly understood reason, the bluetongue germ or virus grew on these sick eggs. After growing on four such eggs in succession, it was able to grow on normal eggs also. This gives the scientists a chance to study the virus in the laboratory with a view to finding a way of

preventing or curing the disease in sheep.

The sick eggs, however, have further disease-fighting possibilities. The South African scientists point out that at least 20 different sick conditions—vitamin deficiencies, intoxications and combinations of these—can be produced in eggs if the hens are put on appropriate rations. Such sick eggs might support the growth of other viruses or germs that have not been grown on normal eggs. The germs of horsesickness, rat typhus and tick-bite fever, however, did not grow any better on sick eggs than on normal ones.

Science News Letter, August 10, 1940

BIOLOGY

Electron Microscope Fellowship Established

KNOWLEDGE of hitherto hidden details of bacteria, viruses and other ultra-small things will be sought under a new fellowship in electron microscope research, established in the National Research Council by the RCA Manufacturing Company. Carrying an annual stipend of \$3,000, it will be open to candidates qualifying to use the electron microscope, a powerful new instrument of investigation in which streams of subatomic particles are used instead of light rays, giving vastly higher magnifications than are possible with even the most powerful of ordinary microscopes.

The work will be carried on in the RCA research laboratories in Camden, N. J., where the American electron microscopes have been developed. In considering candidates, it is announced, "preference will be given to versatile young men of United States citizenship, who have sound training in microbiology, a doctor's degree (Ph.D. or M.D.) and a record of original work." Applications are to be sent to the division of biology and agriculture, National Research Council, Washington, D. C.

Science News Letter, August 10, 1940

A new insulation material from peanut hulls is pronounced almost as efficient as cork and cheaper to produce.

● RADIO

Charles M. Upham, engineer-director of the American Road Builders' Association, will tell of America's needs for Roads for Defense, as guest speaker on "Adventure in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, Aug. 15, 4:00 p.m., EDST, 3:00 EST, 2:00 CST, 1:00 MST, 12:00 PST.

Listen in on your local station. Listen in each Thursday.

IDENTIFICATION

U.S.A. Being Fingerprinted

Identification Registration Required of All Aliens But Many Native-Born Also Having Prints Recorded

By MARJORIE VAN DE WATER

IN TIME of war, identification becomes highly important. Not only are plans being made to fingerprint all aliens, but many loyal American citizens will be fingerprinted to establish their identity and provide proof of it.

All recruits of the Army, Navy and Marine Corps are fingerprinted as a matter of course. All U. S. Civil Service employees are fingerprinted. Every person putting money into a U. S. Postal Savings account is fingerprinted. Babies born in hospitals are commonly fingerprinted—or footprinted.

With a scare of Fifth Columns spreading in the United States, fingerprints may be demanded on many more occasions. It may be necessary for persons working in munitions factories, aviation plants, light and power plants and other key positions to file their fingerprints along with other identifying material with their employers, or their unions, or the government.

Persons owning or carrying revolvers, guns, or other weapons may have to register their fingerprints also,

as is now the case in some states.

For your own protection against the suspicions of alarmed neighbors and excitable "nuts," you may want your own identification securely established by your own fingerprints, proof against any forgery, filed in the Civil fingerprint file of the United States Bureau of Investigation.

Have you ever looked at your own fingerprints? Do you know how to classify those distinctive patterns you have carried around with you at your fingertips all your life?

Why don't you take your own fingerprints today and classify them for your own information? If you like, you can then leave them in your safe or deposit box or some safe place as a permanent means of making sure that you will never be without identification in case you should be lost, injured or killed. If ever you should be missing, your fingerprints and photograph filed together would be a great aid to police and G-men in locating you.

If you want really professional prints, get hold of some ordinary black printer's ink. Put a small amount of the ink on

a clean sheet of glass, metal plate, or marble slab, and even it out with a roller.

The roller inked in this way is then run over a clean sheet of glass and it is this thinly inked plate that is used to ink the fingers.

"Rolled impressions" are required by fingerprint experts to classify them completely. This is how they are made. Thumbs are rolled toward, fingers away from, the body. Begin with the right hand. Take hold of your right thumb with your left hand. Gently press the right side of the thumb down on the lightly inked plate and slowly and firmly roll it over until the other side is down. All the pressure used should come from the left hand because pressing down with the finger being printed will tend to spread the ridges and smudge the print. It is better, of course, to let someone else roll your fingers for you.

As soon as the thumb receives a single inking, roll it in exactly the same way on your fingerprint card or ordinary sheet of paper.

Fingers are printed in the same way except that the side toward the thumb is put down first and the rolling is away from the body.

When all the rolled prints have been made of both right and left hands, then the four fingers of each hand are placed

Name John DoeAlias noneClass. 17 I 29 W IO
0 32 W 0 15No. 16429Color WhiteSex MaleRef. 30
32

POSITIVE PROOF

Faces and figures may change, making even the best of photographs deceptive. But a well-made set of fingerprints constitutes a life-long and positive means of identification.

RIGHT HAND				
1. Thumb	2. Index Finger	3. Middle Finger	4. Ring Finger	5. Little Finger
LEFT HAND				
6. Thumb	7. Index Finger	8. Middle Finger	9. Ring Finger	10. Little Finger

simultaneously, without rolling, on the ink plate and then on the recording sheet. Finally the thumb impressions are so placed.

It is important to have the inking plates and fingers clean and free from moisture or lint. To insure this, you can clean them with benzene or alcohol just before the prints are made.

Less messy to use is a special sensitized paper such as the Faurot stainless system used by many government departments. With this you have only to "ink" your fingers with a colorless and odorless substance which shows up clearly when impressed on the sensitized surface of the special paper.

Prints made with this material are plenty clear enough for identification and, in case you want to gather in your friends' prints at an evening party, you will not run, with this stuff, the same risk of ruining a pair of white flannels or an evening dress that you would if you played with printer's ink.

Look at your prints through a magnifying glass. You will see a number of fine black lines and probably also several white streaks. It is the black inked lines or ridges that make up the pattern used in fingerprint classification. The white marks are caused by the depressions (which are not inked) or by either scars or creases and are not considered.

The fine black lines, termed by experts "ridges," are not random marks but may be classified into four types of patterns. These are called arches, loops, whorls, and composites. Of these the loops are by far the most numerous.

All these types except the arches have at least two points which are used in analyzing the prints—the "core" and the "delta." Look over at the side of your print. You will very likely have no difficulty in picking out a point where a ridge splits apart and runs in two directions, or where two ridges running side by side abruptly part. This point is the delta. The core is the center of the loop or whorl.

Once you have located the delta, it is an easy matter to distinguish between the loop pattern and the whorl. The whorl generally has two deltas, one at each side of the print. Incidentally, it is to show these deltas that it is necessary to make the rolled print; sometimes they are far over on the side of the finger. The loop pattern has but one delta.

Probably you have at least one loop pattern among your prints. Look at it and you will notice that the loop has a slant. If it slants toward the thumb it is technically called a radial loop; if it slants



FIRST FINGERPRINTS

Baby seems to be taking it all very seriously, and indeed he may, for he is being placed on record for life. Even when he is an old man, the fundamental patterns of his fingerprints will not have changed.

toward the little finger, it is called an ulnar loop.

Unfortunately for law enforcement officers, the fingerprints tell nothing of character, personality, or the future in store for the owner. It will not be possible to tell from the fingerprints of an individual whether he is German, Italian, French, British, or American, although it is true that certain fingerprint patterns are more common in some racial groups than in others.

Reproduced on the opposite page is a set of fingerprints made up and classified by the Federal Bureau of Investigation especially for Science Service.

It is the classification that gives the fingerprint system its great value in identification. It permits an expert to look at any impression of a criminal's fingers and go directly to his record, which is filed according to classification, not by name.

The first number, 17 in this case, is the count of the number of ridges from core to delta in the first loop pattern on the record, beginning from the right thumb. This is called the "key." John Doe's left middle finger is the first with a loop pattern and it has 17 ridges.

The second figure, a fraction, is a little more difficult to obtain. It depends on the location of the whorl patterns. Beginning with the right hand, each finger is assigned a numerical value, thus: Right thumb, 16; index finger, 16; middle, 8; ring, 8; little, 4; left thumb, 4; index, 2; middle, 2; ring, 1; little, 1.

Now to find the numerator of the fraction, add the values of every even numbered finger if a whorl occurs in it, beginning with the right index and continuing with the right ring, left thumb, middle and little fingers. Then add one. If no whorls are present in those fingers, the numerator is one.

The denominator is found similarly, but you begin with the right thumb and take the values of the odd numbered fingers.

On John Doe's card, all but two of the prints are whorls. His score is therefore high. In the numerator it is 16 plus 8 plus 4 plus 1, which equals 29. In the denominator it is 16 plus 8 plus 4 plus 2 plus 1 plus 1, or 32.

This fraction is the primary classification.

The second classification merely indicates what patterns occur in the index fingers, the right finger being indicated above the line. In the example, both were whorls, abbreviated "W."

With all the varying counts of ridges and distinguishing patterns on ten fingers it is possible to make use of as many sub-classifications as may be necessary to file and find again many millions of fingerprints.

The Federal Bureau of Investigation now has on file some 12,800,000 fingerprints. If they collect the prints of all aliens, they will add to this collection approximately another 3,000,000.

Science News Letter, August 10, 1940

GENERAL SCIENCE

Science Publications Asked For Interned Researchers

EVEN as Britain prepares to fight for her very life against invading enemies, she also undertakes to make life less burdensome for alien scientists who have been sent to internment camps by supplying them with the mental provender they need to keep abreast of developments in their various fields.

An appeal for recent scientific books and periodicals is published by W. A. Wooster, general secretary of the Association of Scientific Workers (*Nature*, July 20). Publications thus obtained are to be turned over to the interned scientists, many of whom, it is pointed out, are sincere anti-Fascists who have been rounded up in the British government's take-no-chances policy.

In his appeal, Mr. Wooster says:

"We are not able to judge the wisdom or value of this indiscriminating internment, but there is one way by which we can lighten the misfortunes of our fellow scientists and mitigate any feeling of bitterness which might arise. This is by supplying them with the books and periodicals which will enable them to keep abreast of new developments in science and play their part efficiently in the reconstruction of the post-War world.

"Those in internment camps are only allowed to receive new books and publications direct from the publishing offices, and individuals could arrange for books to be bought and sent to scientists in the camps. Newly published books and periodicals can also be sent to the camp libraries, and learned societies might consider sending copies of their journals to these libraries through the Y.M.C.A.

"Such action would be a valuable demonstration of that international spirit of science on which all true scientists set so much store for the future of humanity."

Science News Letter, August 10, 1940

MEDICINE

Dye in Nylon Hose Blamed for Eruption

AN ITCHING, spreading skin eruption, taking weeks to cure, has already followed the wearing of Nylon hose in four cases, Dr. S. J. Fanburg, Newark, N. J., reports (*Journal, American Medical Association*, Aug. 3). It was not the Nylon yarn but the dye or finish used in making the stockings that caused the eruption, it appears from Dr. Fanburg's studies.

All four of the young women who got the skin trouble had been wearing the same brand of hose. As most women know, Nylon yarn is made by the du Pont Company, but the stockings from this yarn are made by various hosiery manufacturers. Dr. Fanburg does not state in his medical report which brand caused the trouble in his patients.

Dyes in hosiery and other articles of wearing apparel have caused skin trouble long before the days of Nylon hose. In many of the cases, the persons afflicted were apparently hypersensitive to the particular dye which did not cause trouble in other persons.

Science News Letter, August 10, 1940

MEDICINE

Pickled Cartilage Used to Fill Skull Depressions

PICKLED cadaver cartilage is now being used to restore lost beauty, or at least to restore the normal contours of face and skull. Success in using grafts of this gruesome material to fill depressions of the skull is reported by Dr. Lyndon A. Peer, of Newark, N. J. (*Journal, American Medical Association*, Aug. 3). The skull depressions followed such ailments as brain abscess or meningitis or fracture of the frontal bones.

The cartilage from human corpses is pickled in alcohol to preserve it. It is then soaked in salt solution for one hour and inserted in a skin pocket in the abdomen. If the patient stands this all right, the graft is removed and inserted beneath the forehead skin to fill out the skull depression.

Fresh cartilage from the patient's own chest is the most satisfactory substance for these grafts, Dr. Peer declares. In some cases, however, the patient will not allow his own ribs to be used, or he may not be in condition to stand such an operation. For these, and for children, the pickled cadaver cartilage is useful. It resists infection surprisingly well.

Pickled cadaver cartilage was extensively used a generation ago to fill depressions in the nose, but unsatisfactory results put it in the discard. When Dr. Peer decided to revive the method, he experimented with human "guinea pigs." Pickled cadaver cartilage was buried under their chest skin for from one week to two years, removed and examined at varying periods. These experiments showed that the material could be used but was not as satisfactory as fresh cartilage.

Science News Letter, August 10, 1940

IN SCIENCE

MEDICINE

Doctors Urged Not to Fear Giving Sulfanilamide

DOCTORS need not be afraid to give sulfanilamide or related chemical remedies, if they can see their patients at least once a day. This encouragement is given by Drs. Perrin H. Long, James W. Haviland, Lydia B. Edwards and Eleanor A. Bliss, of the Johns Hopkins Hospital and Medical School (*Journal, American Medical Association*, Aug. 3).

Reports of patients getting sick, having drug fever, jaundice, kidney and blood disturbances and other bad effects from these new chemical remedies have made many physicians hesitate to use the drugs.

Laboratory tests should be made whenever possible on patients getting these drugs, the Baltimore doctors advise. All the bad effects that may come during the first two weeks of taking these drugs, however, with the exception of acute leukopenia, can be detected by the doctor in daily careful examination of the patient.

Doctors are warned before giving these drugs to learn whether the patient has had a bad reaction to them previously, because in that case a second course of the treatment may cause earlier and more severe reaction.

Science News Letter, August 10, 1940

ENGINEERING

Portable Substations Travel on Trailers

TEMPORARY electrical service may be obtained with the aid of a new line of portable substations, mounted on trailers. There are two types. One has a self-cooled transformer, and requires no attention, while the other uses forced cooling. Both are General Electric Company products.

In use, the trailer, weighing perhaps 20,000 pounds, is towed to the point where service is needed, and connected to the high voltage power line. The transformers step this down to voltages required for use. The new transformer set-ups should prove especially useful in connection with troop cantonments.

Science News Letter, August 10, 1940

CE FIELDS

ZOOLOGY

Canada's Reindeer Herds Increasing, Count Shows

WITH 1,700 reindeer born this year, Canada's reindeer herds in the western Arctic now total about 6,600 animals. When five years ago reindeer reached Canada's western Arctic after an overland trip lasting five years from the west coast of Alaska, there were 2,370 animals in the herd which had made the trying trip. Since then the herds in the Mackenzie River district have increased to the present total.

The reindeer were imported into Canada to provide a new Eskimo industry, because the caribou on which the Eskimos had counted largely for food had been driven away with the onward march of civilization to the north. Eskimos have been trained as reindeer herders, and this autumn the second herd will be given to an Eskimo to look after. This will be a herd of 800 animals which will be driven 250 miles overland from the main reindeer herd to the Horton River district.

The first herd, given to a graduate Eskimo herder nearly two years ago, has increased from 950 to 1,600 head. The agreement under which herds are given to Eskimos is that the natives must eventually return to the Canadian government as many animals as they were given to start with, the increase being their property. In this way the natives are taught to keep their herds in good condition to allow for maximum increase. The herds are to provide food and clothing for western Canadian Eskimos, taking the place of cattle herds of the farm regions to the south.

Science News Letter, August 10, 1940

INDUSTRY

U. S. Machine Tool Needs Pinch Japan's Industries

JAPAN'S manufactures of arms and ammunition, tanks and trucks for warfare on land, planes for air attacks, and ships for sea fighting, may presently feel the pinch of a U. S. embargo that is not really an embargo. Due to the urgent necessity for certain kinds of tools

in our own speeded-up defense program, export in these vital production necessities is being sharply curtailed, Miriam S. Farley reports (*Far Eastern Survey*, July 17).

There is no question here of a discriminatory embargo aimed specifically at the Japanese. The tools are needed in America, and they are not to be shipped out of the country to any foreign nation. Theoretically, this should hit everybody alike, but it does happen that Japan is apparently less nearly self-sufficient than any of the European industrial nations. About 42% of the island empire's total machinery came from the United States in 1936, the last "normal" pre-war year. The rest came mainly from Germany and Britain. With Europe out of production except for the warring nations' own needs, Japan is left heavily dependent on the United States as the only major overseas source of machinery, just at the time when American needs are greatest in connection with our own defense program.

While Japan has been striving desperately to increase its own machine tool production, indications are that the country's capacity to produce has not yet come anywhere near the needs for domestic and Manchukuan consumption. There are reports of industrial undertakings, even those of great strategic importance, being held up for lack of essential machinery.

"If imports from America are severely restricted, either by an embargo, or by higher prices, the effect on Japan's war effort in China or elsewhere will probably not be fatal," Miss Farley states, "but her program for replenishment of armaments and industrial expansion on the continent of Asia will be seriously hampered."

Science News Letter, August 10, 1940

PHYSICS

New Eye Testing Device Makes Use of 36 Lenses

A NEW eye testing device developed by the American Optical Company contains 36 lenses, yet these can be manipulated by oculists to obtain more than sixty billion different prescriptions for glasses.

It contains a battery of test lenses; by manipulating dials and knobs, a great number of combinations can quickly be placed before the eyes. A self-contained mechanism automatically adds the individual lens powers and indicates the total correction.

Science News Letter, August 10, 1940

PHYSIOLOGY

Headlights Bother You? Shutting One Eye Helps

DOES the glare of a strong headlight bother you when you are driving or walking along a very dark road?

Here is a way to prevent it, discovered in England's blackout. Shut one eye when the bright light approaches and open it again when the car has passed. The eye you closed will then be as sensitive as before.

Science News Letter, August 10, 1940

ASTRONOMY

Amateur Astronomers Will Go to Brazil for Eclipse

A GROUP of about fifteen amateur astronomers, members of the Amateur Astronomers Association, which has headquarters at the Hayden Planetarium in New York, will travel to Brazil to observe the total eclipse of the sun on October 1. This was announced by Charles A. Federer, Jr., secretary of the Association and editor of the magazine *Sky*, who will lead the party.

Color motion pictures of the eclipse itself, and also of terrestrial color changes, are among the chief items in the expedition's elaborate program. Still pictures, in black and white and in color, of the sun's prominences and the corona, the latter best seen at eclipse time, will also be made. By spectroscopic apparatus the sun's atmosphere will be studied. Also an effort will be made to take long exposure photographs of the curious "shadow bands," which sometimes flicker across the ground before and after an eclipse. This will employ a stroboscopic camera, with a rotating shutter to stop the motion.

According to Mr. Federer, the expedition will make observations from Campina Grande, at an altitude of 2,000 feet on the Borborema Plateau, and about 80 miles northwest of the city of Recife (formerly Pernambuco). Since the region is known for its long droughts, and September and October are excessively dry, there seems to be slight possibility of clouds interfering.

Mr. Federer says that amateurs from other societies and their friends are invited to join the expedition and to participate in the program. George V. Plachy, chairman of the Association's Committee on Special Events, is in charge of the detailed plans.

Science News Letter, August 10, 1940

GEOGRAPHY

Netherlands Indies Have Had Uneven Development

Islands That Loom Largest on Map Least Suitable For Support of Adequate Numbers of Working Natives

THE NETHERLANDS Indies, covetously eyed by Japan, have been quite unevenly developed by their present owners. Although Java is only fourth in area it is far and away first in development, with plantations climbing terraces to the very mountaintops, a huge and hard-working native population, and vast wealth in its highly organized and diversified export trade.

Compared with Java, the other islands in this great archipelago-empire seem backward and neglected, Jack Shepard points out (*Far Eastern Survey*, July 17). This seeming neglect is not real, however, Mr. Shepard adds, and the lower state of development of the other islands has good and sufficient causes.

None of the other islands is as blessed as Java with wide stretches of rich soil, easy access to the sea, and a large population of willing brown workers. The Dutch-held parts of Borneo and New Guinea, for example, consist largely of rugged, jungle-covered interior uplands surrounded by vast swamps that run down to the sea in impenetrable growths of mangrove. The famed Spice Islands, hotly fought over by Dutch and Portuguese in the 16th and 17th centuries, have soils so poor and thin that general farming, to support real working populations, is out of the question. In many of the islands, especially the larger ones, the natives are so primitive, and frequently so shy or even hostile, that they could never be trained to plantation work.

Oil is the key product of the "neglected" Outer Islands, as the Netherlands Indies outside Java are called. There is oil on Sumatra, Borneo, New Guinea, Ceram and possibly other islands. Oil is now the chief export of the Netherlands Indies, and oil is Number One attraction to the oil-starved Japanese Navy.

Rubber ranks second among the islands' sources of wealth. Greatest rubber plantations are on Java, of course, with Sumatra coming second. There is a very considerable development of small, native-owned rubber plantations in the Outer Islands. More than two-thirds of the rub-

ber acreage in these provinces is in the hands of native growers, many of whom are quite modern in their cultivation methods and marketing arrangements.

BIOLOGY

Biological Stain Laboratory Moves to Philadelphia

SAFEGUARDING an important sector of the nation's health front, at the same time furthering the cause of biological research, a little known but highly important laboratory has established new headquarters at the Philadelphia College of Pharmacy and Science.

It is the laboratory of the Commission on the Standardization of Biological Stains, born of necessity after the first World War and functioning since then in the U. S. Department of Agriculture's great experiment station at Arlington, Va. Mrs. Anis P. Bradshaw, who was in charge of the laboratory at Arlington, has moved along with it to its new location.

The blockade of the first World War worked both ways. It kept supplies from reaching Germany, but it also kept dyestuffs and special chemicals from reaching this country. The hardships suffered then by American textile and other industries are well remembered, and the stimulus thus given to the upbuilding of an American dye industry is well known.

Less frequently noticed by the average citizen are the dyestuffs, relatively small in quantity but of life-and-death importance in medicine, known as the biological stains. A few are used in direct treatment of disease, but most of them find employment in the crucial identification of bacterial and other harmful organisms, and in the examination of pathological tissues. These also, once supplied only from Germany, now come from American sources. It is the busi-

ness of the Commission's laboratory to keep constant check on them, to see that they are true to name and uniform in their chemical makeup and reactions. The stains standardized in the laboratory are used not only in medical and sanitary work but in "pure" biological research as well. Details of cell structure which are invisible under the microscope in unstained plant and animal material stand out in vivid contrast when put through the proper staining procedure. For this work also, dependable dyestuffs are indispensable.

Science News Letter, August 10, 1940

The laboratory was first set up just after the war, in 1920, under the auspices of the National Research Council, on a grant from the Chemical Foundation. During the past two decades the work of the commission has been greatly expanded. It is under the chairmanship of Dr. H. J. Conn of the New York State Agricultural Experiment Station at Geneva, where part of the work on the testing of bacteriological stains is carried out.

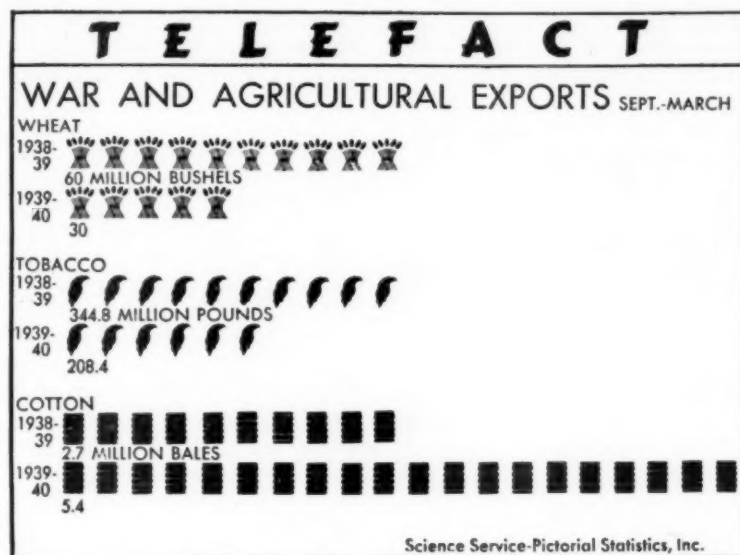
The laboratory was first set up just after the war, in 1920, under the auspices of the National Research Council, on a grant from the Chemical Foundation. During the past two decades the work of the commission has been greatly expanded. It is under the chairmanship of Dr. H. J. Conn of the New York State Agricultural Experiment Station at Geneva, where part of the work on the testing of bacteriological stains is carried out.

The laboratory was first set up just after the war, in 1920, under the auspices of the National Research Council, on a grant from the Chemical Foundation. During the past two decades the work of the commission has been greatly expanded. It is under the chairmanship of Dr. H. J. Conn of the New York State Agricultural Experiment Station at Geneva, where part of the work on the testing of bacteriological stains is carried out.

Science News Letter, August 10, 1940

Reindeer cross-bred with caribou in Alaskan experiments are 50 to 100 pounds heavier than animals of pure reindeer stock.

Reason for not gurgling baby talk at infants: Greatest progress in acquiring good speech, says a Los Angeles speech educator, is made as a rule by a child between six months and the end of the third year.



Science News Letter, August 10, 1940

ENGINEERING

Leadless Storage Battery Sought by Nazi Germany

WITH importation of lead and nickel eliminated by British blockade, intensive efforts are now being made in Germany to develop an electric storage battery dispensing with their use, the U. S. Bureau of Mines has been advised by Consul Sydney B. Redecker, at Frankfurt-on-Main.

In order to stimulate the quest, the High Command of the German Army has offered a prize of 10,000 Reichsmarks (about \$4,000) to any person or organization "that succeeds in developing a new chemo-electric storage system that will meet all the mechanical and other requirements of storage batteries now in use." January 1, 1941, is the time limit for inventors to submit their proposals. The German Army will have the right to use, without cost, any proposals that meet with its approval.

The following comment is made by Mr. Redecker:

"The development of a suitable leadless storage battery would be an achievement of far-reaching consequences for Germany's entire wartime economy. It would not only enable Germany to produce storage batteries upon a scale adequate for meeting existing automotive requirements but would enable greater use of electrically-operated vehicles instead of those operated by liquid fuel,

gasoline, Diesel oil, etc., of which there is a great shortage in Germany.

"Efforts in the past contemplating the use of electrically-operated vehicles have resulted in failure owing to the fact that the requisite batteries would entail much greater consumption of lead and other imported metals."

A storage battery does not really store electricity. Its operation is essentially the same as any battery, even the common dry cell, where a chemical reaction is accompanied by the production of electricity. With the storage battery, unlike the dry cell, the reaction is reversible. When current is fed to the battery, it is restored to its "charged" state.

When a storage battery is charged, one set of the lead plates is covered with

peroxide of lead. These are immersed in sulphuric acid solution. As the battery discharges, both plates become coated with lead sulphate. When the battery is charged again, the negative plate is changed back to lead, and the positive to lead peroxide.

Thomas A. Edison invented a type of storage cell that does not use lead, and this is widely used in this country. Instead of acid, a solution of caustic potash is employed as the liquid. Nickel peroxide takes the place of the lead peroxide, while the plates are of iron. About half the weight of the lead cell, it has a number of advantages. It is not as well adapted for automobile starting, but can be used for electrical operation of vehicles. Presumably because of the shortage of nickel in Germany, this does not solve their problem.

Science News Letter, August 10, 1940

PSYCHOLOGY

Shy, Unfriendly Dogs Are Just Born That Way

"NICE DOGGIE. Here, Pooch! Come get the bone."

But not every Pooch responds to such overtures of friendliness. Instead of coming forward with wagging tail, he may approach "with mincing steps, tail motionless and dragging, and with frequent retreats to safer ground."

Shyness and unfriendliness in dogs is a fear response and is an hereditary trait, Dr. Frederick C. Thorne, of the Vermont College of Medicine, Brandon, Vt., has discovered (*Jour. Genetic Psychology*, June).

Using three simple tests for measuring the friendliness of untamed dogs to an unknown person, Dr. Thorne found that most dogs became friendly rapidly. About one-fourth, however, showed varying degrees of unfriendliness that was not modified by training.

Even when the dog's confidence had been won by Dr. Thorne, the animal was

LETTER SUBSCRIPTION COUPON

To Science News Letter, 2101 Constitution Avenue, Washington, D. C.

☐ Start ☐ Renew my subscription to SCIENCE NEWS LETTER for ☐ 1 year, \$5 ☐ 2 years, \$7

Name _____

Street Address _____

City and State _____

(No extra postage to anywhere in the world)

SCIENCE NEWS

no more friendly to strangers than he had been at the beginning of the experiment. When raw juicy meat was offered the dogs instead of dog biscuit, the friendly animals accepted the meat with alacrity, but the shy dogs became even shyer and showed more fear. Left alone, however, they ate both meat and dog biscuit.

Shy dogs, he found, were all related to other dogs which had been shown to

be shy. Forty of the shyest animals in the group were second, third and fourth generation descendants of a single bitch who was known as a fear-biter. Even when raised from birth with friendly animals, shy dogs do not lose their shyness. Unfriendliness, however, could not be conditioned in animals that were friendly at the start.

Science News Letter, August 10, 1940

ECONOMICS

Japan to Suffer Most From Ban on Aviation Gas Exports

Sales Within Western Hemisphere Permit Canada To Obtain Unlimited Supplies in This Country

JAPAN is due to be much harder hit than Great Britain, by President Roosevelt's recently imposed ban on the export of American aviation gasoline to points outside the Western Hemisphere. A leak in the embargo as wide as a hangar door exists at our northern boundary.

Canada can, and presumably will, be licensed to purchase all the aviation gasoline she wants from American refiners. To be sure, applications for export license require the ultimate consumer to be named—but so far as is known at present, the naming of the Royal Air Force as ultimate consumer need not prevent the sale to Canadian agents.

Japan might seek a similar middleman somewhere in this hemisphere—but where to find one, in the face of probable frown on Uncle Sam's suddenly sterner visage, might be another problem.

Even should the embargo be sufficiently rigidly interpreted to prevent any of our aviation gasoline being re-shipped to

Britain, it would be quite unlikely to be clamped down so tight as to prevent Canada from obtaining the great supplies she now needs for her huge aviation training program, now just fairly hitting its stride. British as well as Dominion student pilots are roaring through Canadian air with Yankee fuel in their tanks. And since that air is strictly within the Western Hemisphere the law can be observed to the very letter and still leave plenty of room for American aid and comfort to the enemies of Nazi Europe.

Another possible legal leak in the embargo might be found by exporting crude oil instead of gasoline. Britain has far greater refining facilities than Japan (provided they are not blitz-bombed into ruins during the next couple of weeks) and can probably produce aviation gasoline from American crude oil at a much greater rate, if it becomes necessary.

As a matter of fact, that seems to have been the case up to the end of 1937. In that year, the United Kingdom imported 753,000 barrels of crude oil from this country, besides much larger quantities from other lands. Imports of American crude dropped to 89,000 barrels in 1938, while imports of motor fuel from this country jumped from 1,294,000 barrels to 1,555,000.

Crude oil exports from the United States to Japan were 15,995,000 barrels in 1937, and they rose to 21,290,000 barrels in 1938. It is doubtful whether Japan's refinery capacity can stand the strain of an attempt to produce all, or nearly all, of the aviation gasoline needed for her bombers over China out of imported crude oil, even supposing she can get it.

Science News Letter, August 10, 1940

MILITARY SCIENCE

Robot Bombardier Spaces Fall of Bombs Accurately

A ROBOT bombardier, that automatically gives a series of electrical impulses so that a bombing plane can lay its deadly eggs in any desired number and at regular intervals, has just been granted patent number 2,209,380 by the U. S. Patent Office. The inventor is Ralph L. Bell, of Raspeburg, Md., who has assigned the rights to the Glenn L. Martin Company, of Baltimore, one of the principal builders of bombers.

The bombs are in racks from which they are released electrically, either by pressing a button, or from a bomb sight so arranged that the electric impulse is given when properly aligned with the target. With Mr. Bell's invention, it is possible to start the series either with a button or from the bomb sight. Then the bombs are dropped, in any desired number, and at equally spaced points along the ground. The machine automatically takes into account the ground speed of the airplane. The entire device is connected by means of plugs, so it can easily be removed from one plane and used in another.

The control is accomplished by a motor. This is connected to a dial that indicates the intervals between bombs, on a series of concentric circles, corresponding to different ground speeds. In use, the aviator must know his speed; he adjusts the motor until the hand shows, on the correct circle, the intervals at which he wants his bombs dropped. Then he sets another dial to the number of bombs in the train, and the machine does the rest. A third dial indicates the number of bombs remaining in the rack.

Another device useful in aerial warfare has been patented by Josef Tichy, of Brno, Czechoslovakia. Assigned to a Czechoslovak corporation, it probably now is in use by the Germans.

This is an instrument for measuring, from the ground, the speed of an approaching plane, so that the fire of anti-aircraft batteries can be adjusted. The height of the plane above the ground must be determined with other methods. As it comes toward the observer, he sights through the device, and counts, in seconds, the time it takes the plane to pass between two points on a horizontal index. On a dial he sets the altitude, then, opposite the time measured, is shown the plane's speed.

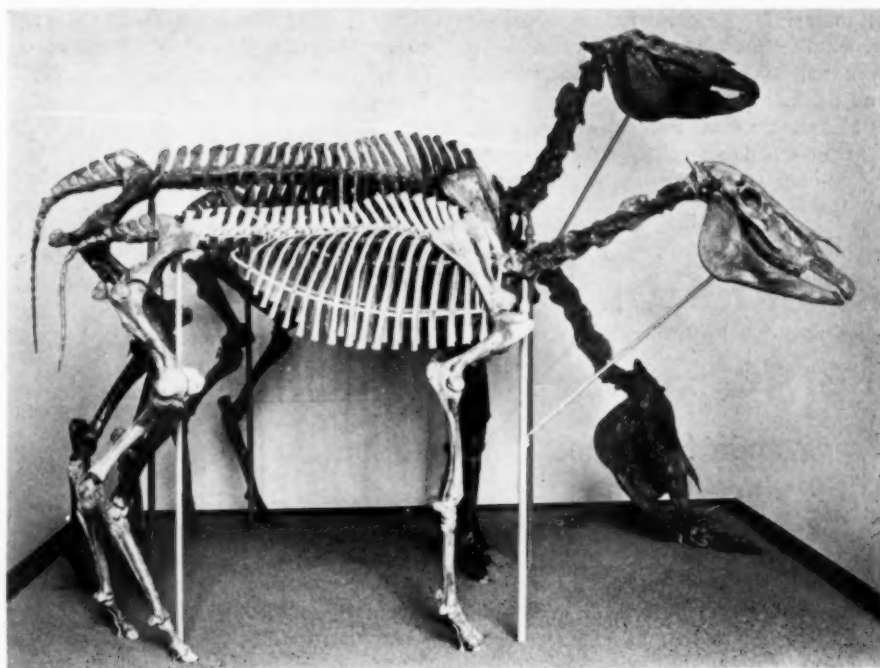
Science News Letter, August 10, 1940

BOOKS

SCIENCE NEWS LETTER will obtain for you any American book or magazine in print. Send check or money order to cover regular retail price and we will pay postage in the United States. If price is unknown, send \$5 and the change will be returned. When publications are free, send 10c for handling. Address:

Book Department

SCIENCE NEWS LETTER
2101 Constitution Ave.
Washington, D. C.



FAMILY GROUP OF 50,000,000 YEARS AGO

At first glance, this looks a little like a complex skeleton with three necks and skulls. It resolves itself, however, into a group of three skeletons of the Upper Pliocene horse, *Plesippus*, recently put on display in the U. S. National Museum. Center, with head held high, is the stallion; at right, a half-grown young horse; at left, the mare noses at the pitiful little bones of a dead new foal. The group was assembled out of bones dug up in the Northwest.

Science News Letter, August 10, 1940

WILDLIFE

Wild Geese, Prized in U. S., Are Pests on Far South Isle

WILD GEESE, prize birds to North American sportsmen, are worth nothing apiece on Tierra del Fuego, large island that forms the southern tip of South America. The two most common species, whose numbers are estimated at a hundred million, are regarded as pests by the Argentine and Chilean sheep ranchers because they eat so much grass and because they foul the ground so badly that sheep refuse to graze where the geese have been.

Instead of doing anything to conserve the geese, the ranchers do all they can to kill them off, reports Dr. T. Gilbert Pearson, president emeritus of the National Association of Audubon Societies, who has been in South America conducting a study on wildlife conditions for the International Committee for Bird Preservation.

One large rancher hired men to collect

the eggs of the birds. In one season they collected 60,000 dozen goose eggs, with no noticeable effect on the number of geese. So the rancher gave it up as a waste of time and money.

In general, wildlife receives scant protection in Chile, Dr. Pearson states. There are a few inadequate game laws, but enforcement is half-hearted. Dynamiting and netting fish is common practice; wild doves are sold in the market at 18 pesos (60 cents) a dozen; more than a ton of guanaco skins were exported from the country in one year. The guanaco, a small relative of the camel, is continually growing scarcer.

Chileans are only now beginning to realize what this reckless waste of wildlife will eventually mean to their country. If effective action toward a conservation program can be taken soon, they will still have the advantage of a larger stock

of wildlife for restoration purposes than the United States had when the movement got well started in this country.

Science News Letter, August 10, 1940

ENGINEERING

Half of Railroad Trackage Still Lacks Block Signals

THE HEAD-ON collision near Akron, Ohio, of a gasoline rail car with a freight train, causing more than 40 deaths, calls attention to the fact that less than half of the nation's passenger rail trackage is equipped with automatic block signals. Data on file in Washington, D. C., indicate that the stretch where the collision occurred did not have the automatic signals, but used manually operated ones.

Automatic block signals indicate some distance away whether a train is in a certain block. It is too early to tell whether these would have prevented the Akron wreck, but it seems likely that they would have done so.

According to S. N. Mills, director of the Bureau of Safety of the Interstate Commerce Commission, there was on January 1, 1940, a total in the United States of 208,848 miles of track used by passenger lines. Over 62,943 miles, mostly carrying light traffic, there are no signals, but the trains are operated by orders. Manually controlled signals, operated by men in signal towers or stations, protect 50,018 miles. This type of signal seems to have been used on the line where the crash occurred. Automatic block signals are used over 95,887 miles, making a total of 145,905 miles protected with some kind of signal.

Mr. Mills stated that his department is investigating the Akron wreck with two local inspectors, and another who has been sent from Washington. Several weeks will elapse, he said, before a definite report can be made.

Science News Letter, August 10, 1940

● Earth Trembles

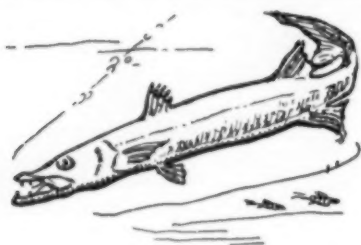
Information collected by Science Service from seismological observatories resulted in the location by the U. S. Coast and Geodetic Survey of the following preliminary epicenter:

Saturday, July 27, 8:32.4 a.m., EST

Off the Pacific coast of Guatemala. Latitude 13.8 degrees north. Longitude 91.7 degrees west.

A strong shock.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see SNL, Feb. 24.



The Tale of Teeth

PROBABLY no structures in all animal anatomy have so high a degree of specialization as teeth. So characteristic have their shapes become that a well-trained and experienced scientist can pick up a stray tooth—sometimes even just a piece of a tooth—and tell at a glance whether it belonged to a plant-eating or a carnivorous animal. Frequently he can even name the kind of animal and tell what part of its jaw the tooth came from.

Most primitive of all tooth shapes is the simple elongate cone, or spike-shaped tooth, like those of trout, pike, alligator and the gigantic extinct reptiles the tyrannosaurs. Teeth of this pattern are good for grabbing and holding, fairly good for rending and tearing, but of little use in chewing. Animals that have nothing but conical teeth usually swallow their prey whole, or at most tear it into big chunks and gulp those down. They are almost never plant-eaters.

A highly specialized variation of the conical tooth pattern are the fangs of poisonous snakes. These keep their round cross section and sharp point, but are hollowed into hypodermic needles. Other teeth in snakes follow the conventional narrow-conical or spike pattern.

Teeth specialized as knives rather than spikes or hooks are typified by the terrible triangular blades that line the mouths of most common sharks. Similar to them in shape, but somewhat more complex in basic structure, are the teeth you can find just back of the eyeteeth in dogs, cats and other carnivores. These are called "carnassials" or flesh-teeth.

As remote as possible from flesh-tearing and -cutting teeth are those with flat grinding surfaces, the molars. The flatter and broader the molar surfaces, the more nearly completely herbivorous is the animal that uses them. The ultimate

in molars is possessed by the elephant, which has just one enormous molar in each half of each jaw—a tooth as wide and flat as an ordinary brick.

The last refinement in dental evolution is—no teeth at all! Animals that have dispensed with teeth altogether

either grind their food with gizzard-stones, as all birds do, or swallow soft, easily digested food in small morsels, like frogs, toads and ant-eaters. Also milk-toast-eating nonagenarians, among our own species.

Science News Letter, August 10, 1940

ETHNOLOGY

Indians of Both Americas Targets of "Fifth Columns"

Propaganda for Home Consumption and Hope of Stirring Up Revolutions Here Are Mainsprings of Agitation

WARNING that "fifth columnists" are driving against America's Indians—not merely the 340,000 Indian minority of the United States, but the impressive ranks of 30,000,000 Indians in the Western World—is sounded by U. S. Commissioner of Indian Affairs John Collier.

Efforts to stir up discontent and dissension among Indians within the United States are having practically no success, Mr. Collier is convinced. He has high praise for Indian loyalty to the Government, and recalls that in World War days, Indians—not subject to the draft—nevertheless volunteered in numbers far beyond draft quotas.

An example of Indian approval of democracy and its defense was offered by the biggest of United States tribes, when the tribal council of the Navajos met in June to talk over world problems. In neatly clipped language the council, speaking for 50,000 Indians, unanimously approved a resolution, which ended:

"Now, therefore, we resolve that the Navajo Indians stand ready, as they did in 1918, to aid and defend our Government and its institutions against all subversive and armed conflict, and pledge our loyalty to the system which recognizes minority rights and a way of life that has placed us among the greatest people of our race."

Why "fifth columnists" should rate the comparatively small Indian minority of this country worth special attention was explained by Commissioner Collier recently to a congressional committee.

"At first, the object seemed to be to feed propaganda back home," he stated. "The totalitarian states were persecuting their minorities, and if these states could draw a picture of present persecution by the United States against its most famous

minority, the propaganda effects at home or throughout Europe might be valuable."

It was to attract Indians toward totalitarianism, Mr. Collier points out, that a German court in a test case pronounced a Sioux Indian an Aryan, and therefore eligible to German citizenship. This would imply that Germany rates Indians among the Aryans, in contrast with the usual scientific view that Indians are Mongolian.

In recent months, he added, a more immediate and important object of "fifth column" boring has appeared: the possibility of stirring up the New World's Indians to revolution. An Indian speaker is reported as stating that three-quarters of a million Gold Shirt Indians in Mexico stand waiting for revolution in that country, expecting it this year.

Whether or not such a revolution in Mexico is attempted, Mr. Collier predicts that "fifth column" activities among the Indians will be on the scale of the hemisphere, and may have power to do infinite harm to the Indian race, to the cause of democracy, to hemisphere solidarity, and to the United States."

The New World's Indian millions, whose problems have been discussed this year in the first international meeting of government representatives ever called for that purpose, are far from a minority in some Pan-American countries. Indians constitute 80 per cent. of the people in Peru, Bolivia, Honduras, Guatemala, and Ecuador. About half of the Colombia and Venezuela populations are Indians.

A year ago, Mr. Collier rated efforts to influence Indians toward totalitarianism not very important. Now, he considers the cooperation of the Indian millions vital to the New World's future.

Science News Letter, August 10, 1940

•First Glances at New Books

Additional Reviews
On Page 96

MEDICINE

DIRECTORY OF MEDICAL SPECIALISTS, Certified by American Boards, 1939—Paul Titus, ed.—*Columbia Univ. Press*, 1573 p., \$5. This is the first official directory listing names, addresses and biographic data of medical specialists in the United States. By medical specialists is meant those physicians certified, by examining boards, as qualified to practice in some special field of medicine: for example, surgeons certified by the American Board of Surgery, eye doctors certified by the American Board of Ophthalmology, etc. Certification by any one of these boards is evidence that the physician "is qualified by training to be recognized as a specialist, instead of being merely a self-styled 'specialist.'" Because several of the boards are still "young," many older, fully qualified men have not yet been certified, so that not all the qualified specialists will appear in this Directory. The volume and succeeding editions which are promised every two years should be extremely helpful in many ways.

Science News Letter, August 10, 1940

MEDICINE

VITAMIN E: A Symposium Held under the Auspices of the Food Group . . . of the Society of Chemical Industry . . . at the School of Hygiene and Tropical Medicine, Keppel Street, London—Chemical Pub. Co., 88 p., \$2. Medical scientists will be interested in the papers of this symposium. They deal almost exclusively with the chemistry of vitamin E and its effects on reproduction. The relation of the vitamin to muscular dystrophies and nerve degenerative disorders, subject of many recent clinical reports, is barely mentioned.

Science News Letter, August 10, 1940

MEDICINE

VITAMIN D—C. I. Reed, H. C. Struck and I. E. Steck—Univ. of Chicago Press, 389 p., \$4.50. The general public knows vitamin D as a rickets-preventing and curing substance given to babies and growing children. Since that point was established, however, medical scientists have continued investigations on the vitamin, its chemistry, its effects on the body in varying doses and the possibilities of overdosage and of use of the vitamin in treating other ailments. In this book the authors present the results of some of their findings on these subjects.

The book is too technical for lay reading, but fellow scientists will be interested.

Science News Letter, August 10, 1940

PHYSIOLOGY

A TEXTBOOK OF PHYSIOLOGY (14th ed., rev.)—William H. Howell—*Saunders*, 1117 p., illus., \$7.50. This standard textbook has again been brought up to date, including such very recent discoveries as the role of vitamin K in control of hemorrhage in the new-born.

Science News Letter, August 10, 1940

BIOCHEMISTRY

ANNUAL REVIEW OF BIOCHEMISTRY, Vol. IX, 1940—James Murray Luck and James H. C. Smith, eds.—*Annual Reviews, Inc.*, 744 p., \$5. This volume of the Review should be doubly appreciated in view of the war-borne difficulties that attended its preparation, including delayed mails and inaccessibility of some journals published abroad. Individual scientists are finding it hard to see original publications and thus are more dependent than ever on such volumes as this.

Science News Letter, August 10, 1940

MEDICINE

MODERN DIABETIC CARE—Herbert Pollock—Harcourt, Brace, 216 p., \$2. This book, intended for persons with diabetes and their physicians, contains a vast amount of sound, practical information on diet, insulin and protamine zinc insulin, exercise, general hygiene and the like.

Science News Letter, August 10, 1940

MEDICINE

OBSERVATIONS MADE DURING THE EPIDEMIC OF MEASLES ON THE FAROE ISLANDS IN THE YEAR 1846—Peter Ludwig Panum; translated from the Danish by Ada Sommerville Hatcher—Delta Omega Society; distributed by Amer. Public Health Assoc., 111 p., \$2.50. Physicians and public health workers will be interested in this classic of epidemiology.

Science News Letter, August 10, 1940

BIOGRAPHY—MEDICINE

I GO HORIZONTAL—Duff Gilfond—Vanguard, 281 p., \$2.50. The author tells, in informal style, her experiences during an attack of encephalitis, popularly known as sleeping sickness. For those who like to read about symptoms and doctors and hospitals, this book will provide exciting entertainment.

Science News Letter, August 10, 1940

GENERAL SCIENCE

DANGEROUS THOUGHTS—Lancelot Hogben—Norton, 283 p., \$2.75. The author of "Mathematics for the Millions" views science and the world about us as a scientific humanist, aligning himself neither with the "credit monopolists" nor with the Left intellectuals. From the epilogue, written after anti-Hitler war came to England: "The party programme of the Age of Plenty will not be drafted by men united in a common impulse to oppose, to contradict, and to destroy. It will be the work of men united in the impulse to create a new order."

Science News Letter, August 10, 1940

EDUCATION

THE CURRICULUM OF THE COMMON SCHOOL—Henry C. Morrison—Univ. of Chicago Press, 681 p., \$4. A plan for the ideal curriculum as conceived by the author. Although the book is primarily intended for teachers and school officials, its content is of great interest as well to all parents and indeed all Americans.

Science News Letter, August 10, 1940

NUTRITION

HEIL HUNGER! Health Under Hitler—Martin Gumpert—Alliance Book Corp., 128 p., \$1.75. "This book studies the effect of the Nazi regime on the health of the German people. . . . For six years Germany has lived under what amounts to war-time conditions, and is today found in such a weakened physical state that it is doubtful if her people can from a physical standpoint endure much more privation."

Science News Letter, August 10, 1940

PSYCHOLOGY

LIFE: A PSYCHOLOGICAL SURVEY (2d. ed.)—Sidney L. Pressey, J. Elliott Janney and Raymond G. Kuhlen—*Harper*, 654 p., \$2.50. This readable book from the psychology department of Ohio State University is intended to give the reader a very practical understanding of himself and others—an understanding which will enable him to "make his own life more successful and more happy, and to deal with others more wisely."

Science News Letter, August 10, 1940

MEDICINE

BLOOD GROUPS AND BLOOD TRANSFUSION (2d. ed.)—Alexander S. Wiener—*Thomas*, 306 p., illus., tables, \$5.

Science News Letter, August 10, 1940

• First Glances at New Books

Additional Reviews
On Page 95

BOTANY

A MANUAL OF AQUATIC PLANTS—Norman C. Fassett—*McGraw-Hill*, 382 p., illus., \$4. Botanists, especially taxonomists and ecologists, will rise up to bless the name of Fassett for bringing out this book. Plants of the water and waterside have a habit of being among the "peskiest" things to identify correctly that ever get into a vasculum. These keys and illustrations make the work easy for most species, possible even for the most difficult. The quality of the habit sketches, combining accurate representation of critical characters with a feel for artistic composition not always present in botanical drawings, is especially worthy of note.

Science News Letter, August 10, 1940

RECREATION

FOREST OUTINGS—Russell Lord, ed.—*Govt. Print. Off.*, 311 p., illus., Paper, 75c., Buckram, \$1.25. In the new program of multiple use for America's forest lands, not the least of the uses is public recreation. Better than it has ever been done before, the possibilities for pleasant outings in the woods are set forth in this well-illustrated volume by thirty foresters, under the editorship of one of the best known of "nature publicists."

Science News Letter, August 10, 1940

GEOGRAPHY

THE POCKET GUIDE TO THE WEST INDIES—Sir Algernon Aspinall—*Chemical Pub. Co.*, 525 p., maps, \$3.75. The ninth edition, described as completely revised, this chunky small volume gives travel information not only for islands but nearby mainland of the American tropics. It has many maps and plans, and a good index. It will fit into a blanket roll.

Science News Letter, August 10, 1940

ECONOMICS

PLANNING FOR PRODUCTIVITY—K. Lönnberg-Holb and C. Theodore Larson—*International Industrial Relations Inst.*, 43 p., \$1. A check-list of information which must be taken into account in connection with production in any field, technical, industrial and cultural, with building used as an example.

Science News Letter, August 10, 1940

ANTHROPOLOGY

THE ANTHROPOLOGY OF IRAQ, Part I, No. 1, The Upper Euphrates—Henry Field—*Field Museum of Natural History*, 224 p., 48 pl., \$1.50. The first vol-

ume of a comprehensive report on anthropometric studies in Iraq and Syria. In addition to the tables and discussions on this subject, the volume includes much information about the land, health conditions among the Arabs, mammals collected by the Museum, and other topics.

Science News Letter, August 10, 1940

ANTHROPOLOGY

INGALIK MATERIAL CULTURE—Cornelius Osgood—*Yale Univ. Press*, 496 p., illus., \$4. Recognizing an important gap in ethnographic knowledge of North American cultures in interior Alaska, Dr. Osgood has made a detailed study of material culture in the Indian village at Anvik on the lower Yukon. This report is to be followed by others, of more interpretive nature.

Science News Letter, August 10, 1940

ANTHROPOLOGY

RITUAL ABLATION OF FRONT TEETH IN SIBERIA AND AMERICA—Ales Hrdlicka—*Smithsonian Institution*, 32 p., 5 pl., 30c. Cranial evidence is presented which indicates that pulling one or more healthy teeth of adolescents was a rite in parts of the Old World from upper Paleolithic times. The custom reached prehistoric America, Dr. Hrdlicka concludes, in fairly recent times.

Science News Letter, August 10, 1940

PHOTOGRAPHY

MAKE YOUR PICTURES SING! How to Perfect Your Technique—Paul Louis Hexter—*Camera Craft*, 188 p., illus., \$3. The click of the shutter is only a very small part of the procedure of making a beautiful photograph. If your interest in photography extends to the secrets of the darkroom, you will want to own this book which provides fundamentals for the beginner and new ideas for the experienced photographer.

Science News Letter, August 10, 1940

CHEMISTRY

THEORETICAL QUANTITATIVE ANALYSIS—Louis Waldbauer—*Blakiston*, 248 p., \$2.75. An introductory account of the theory at the basis of quantitative analysis, making use of modern developments.

Science News Letter, August 10, 1940

CHEMISTRY

LABORATORY MANUAL FOR GENERAL CHEMISTRY, A First Course—Leon E. Young and C. W. Porter—*Prentice-Hall*, 255 p., illus., \$1.95.

Science News Letter, August 10, 1940

PHYSICS

PHENOMENA AT THE TEMPERATURE OF LIQUID HELIUM—E. F. Burton, H. Grayson Smith and J. O. Wilhelm—*Reinhold*, 362 p., diagrams, \$6. It was in 1923 that Onnes, at Leiden, first liquefied helium, but now it is available at a score of laboratories, and a considerable amount of research has been done at the low temperatures obtained with it, down to a small fraction of a degree K. In this book the director of the McLennan Laboratory of the University of Toronto, the second place where helium was liquefied, and two of his associates cover these studies in a complete and authoritative manner.

Science News Letter, August 10, 1940

CHEMISTRY

SPECIFIC AND SPECIAL REACTIONS FOR USE IN QUALITATIVE ANALYSIS, With Particular Reference to Spot Test Analysis—F. Feigl; translated from a revision of the third German edition by Ralph E. Oesper—*Nordemann*, 192 p., \$3.50. Previously, the practical part of Dr. Feigl's work in German was made available in English as "Qualitative Analysis by Spot Tests." This book answers the demand for a translation of the theoretical section.

Science News Letter, August 10, 1940

CHEMISTRY

QUALITATIVE ANALYSIS AND CHEMICAL EQUILIBRIUM (Rev. ed.)—T. R. Hogness and Warren C. Johnson—*Holt*, 538 p., \$2.90. As in the first edition, the aim of this text is not merely to teach analytical technique, but to use it to help the student understand basic principles. The authors also endeavor to introduce the student early in his career to "semi-micro" procedures.

Science News Letter, August 10, 1940

MEDICINE

OPHTHALMOLOGY—Burton Chance—*Hoebner*, 240 p., \$2. Much of interest, both historical and modern, appears in this review of progress in knowledge about eyes and their diseases.

Science News Letter, August 10, 1940

ENTOMOLOGY

THE STORY OF BEES—WPA Pennsylvania Writer's Project—*Albert Whitman*, 45 p., illus., 50c. The story of one of the most interesting and familiar of insects, told in short words and straightforward fashion for the youngest readers.

Science News Letter, August 10, 1940